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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,455	07/10/2003	Yingyong Qi	030255	3240
23696	7590	04/03/2007	EXAMINER	
QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121			BRIER, JEFFERY A	
			ART UNIT	PAPER NUMBER
			2628	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		04/03/2007	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/617,455	QI ET AL.	
	Examiner	Art Unit	
	Jeffery A. Brier	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 26 January 2007.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-15 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 7/10/2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

Detailed Action

Response to Amendment

1. The amendment filed on 1/26/2007 has been entered.

Response to Arguments

2. Applicants election of claims 1-14 without traverse is noted. The 1/26/2007 amendments to the claims as well as the arguments filed on 3/13/2006 overcomes the previous prior art rejection. However, it is noted the amendments to the claims enters inconsistencies in claim language which renders an analysis of the prior art and the claims difficult. Thus, a prior art rejection cannot be made because the metes and bounds of the claims are not definite and because the specification does not clarify the claims. Thus, an indication of allowability would be premature. *In re Steele*, 305 F.2d 859,134 USPQ 292 (CCPA 1962) (it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under 35 U.S.C. 103 on these assumptions).

Drawings

3. The drawings are objected to because The shadings on the sheets for figures 1-4 makes figures 1-4 unclear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be

removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: the paragraph numbering starting on page 3 after paragraph [0015] is incorrect.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1:

This claim claims to "selects a line of pixels within the rectangular area of pixels" and to evaluate a line of pixels. Since there are many lines of pixels due to the "selects a line

of pixels within the rectangular area of pixels" limitation, it is not clear how this claimed renderer will be useful in producing a useful, concrete, and tangible result when only one line of pixels is evaluated. Evaluating one line of pixels will not generate pixels for the entire triangle. *State Street Bank & Trust Co. v. Signature Financial Group Inc.* (CA FC) 47 USPQ2d 1596, 1603 (7/23/1998).

Claim 3:

This claim applies the coefficient matrix to each of the pixel within the rectangular area while parent claim 1 ceases evaluation upon determining that at least one pixel of the line falls within the triangle area and a current pixel no longer falls within the triangle area. Thus, the metes and bounds of claims 1 and 3 are unclear.

Claim 11:

This claim's rasterizer evaluates coordinates associated with the pixel values of the rectangular area while parent claim 1 ceases evaluation upon determining that at least one pixel of the line falls within the triangle area and a current pixel no longer falls within the triangle area. Thus, the metes and bounds of claims 1 and 11 are unclear.

Claim 15:

This claim claims a cache memory to store at least a portion of the pixels, however, claim 1, did not generate any pixels, thus, in the claim language no pixels are present to be stored in the cache memory and it is not clear which pixels applicants intends to claim to be stored in the cache memory.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim 1-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Applicant's specification at page 3 in the paragraph numbered [0002] defines the process as software and thus defines the renderer as software as well since this paragraph does not exclude the use of a software renderer. This application describes using mathematical algorithms to perform the functions of the renderer. Therefore, these claims are directed to manipulating abstract mathematical algorithms without claiming a "useful, concrete and tangible result". State Street Bank & Trust Co. v. Signature Financial Group Inc. (CA FC) 47 USPQ2d 1596, 1603 (7/23/1998). AT&T Corp. v. Excel Communications Inc. (CA FC) 50 USPQ2d 1447. On page 1603 first paragraph the CAFC wrote in State Street:

Under Benson , this may have been a sufficient indicium of nonstatutory subject matter. However, after Diehr and Alappat , the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of course, its operation does not produce a "useful, concrete and tangible result." Alappat , 33 F.3d at 1544, 31 USPQ2d at 1557. 7

On page 1603 paragraph labeled [4] the CAFC wrote:

[4] The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to 9 -- process, machine, manufacture, or composition of matter--

but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice. See *In re Warmerdam*, 33 F.3d 1354, 1359, 31 USPQ2d 1754, 1757-58 (Fed. Cir. 1994).

Re claims 1-15:

Claims 1-4, and 10 claim mathematical processing without claiming useful, concrete and tangible result, thus, they preempt the use of the underlying abstract mathematical algorithms used to perform the function of these claims. Claims 5, 7, 8, 9, 11, and 12 claim to render pixels but these pixels are just any data, thus, they do not claim "useful, concrete and tangible result". Claim 6 claims the attributes of the pixels are at least one of color values and texture values, however, these are just data which do not manifest a "useful, concrete and tangible result". Claims 13 and 14 limit the apparatus to either a "wireless communication device" or an "integrated circuit", however, these claims still do not claim a "useful, concrete and tangible result" since each of these devices have not been defined to be not a use of the underlying mathematical algorithm. Claim 15 claims a cache memory to store at least a portion of the pixels, however, the analysis in *State Street* did not refer to the storage found in the claim as producing the "useful, concrete and tangible result". Thus these claims are claiming the mathematical algorithm and algorithm's abstract results unlike the anti-aliased pixel illumination intensity data displayed on a display means of *In re Alappat*, 31 USPQ2d 1545, 1555, 1557 (Fed. Cir. 1994) and unlike the dollar amounts of *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 47 USPQ2d 1596, 1601

1601 (Fed. Cir. 1998) and unlike the condition of a patient's heart of Arrhythmia

Research Technology Inc. v. Corazonix Corp., 22 USPQ2d 1033 (Fed. Cir. 1992).

Alappat discussed claim 15 at page 1555 and discussed their rationale at page 1557.

State Street discussed the dollar amounts rationale at page 1601.

Alappat's claim 15 discussion:

When independent claim 15 is construed in accordance with Section 112 Para. 6, claim 15 reads as follows, the subject matter in brackets representing the structure which Alappat discloses in his specification as corresponding to the respective means language recited in the claims:

A rasterizer [a "machine"] for converting vector list data representing sample magnitudes of an input waveform into anti- aliased pixel illumination intensity data to be displayed on a display means comprising:

- (a) [an arithmetic logic circuit configured to perform an absolute value function, or an equivalent thereof] for determining the vertical distance between the endpoints of each of the vectors in the data list;
- (b) [an arithmetic logic circuit configured to perform an absolute value function, or an equivalent thereof] for determining the elevation of a row of pixels that is spanned by the vector;
- (c) [a pair of barrel shifters , or equivalents thereof] for normalizing the vertical distance and elevation; and
- (d) [a read only memory (ROM) containing illumination intensity data, or an equivalent thereof] for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.

Alappat's rationale discussion at page 1557:

(b)

Given the foregoing, the proper inquiry in dealing with the so called mathematical subject matter exception to Section 101 alleged herein is to see whether the claimed subject matter as a whole is a disembodied mathematical concept, whether categorized as a mathematical formula, mathematical equation, mathematical algorithm, or the like, which in essence represents nothing more than a "law of nature," "natural phenomenon," or "abstract idea." If so, Diehr precludes the patenting of that subject matter. That is not the case here.

Although many, or arguably even all, ²² of the means elements recited in claim 15 represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits, the claimed invention as a whole is directed to a combination of interrelated elements which combine to form a

machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means.²³ This is not a disembodied mathematical concept which may be characterized as an "abstract idea," but rather a specific machine to produce a useful, concrete, and tangible result.

State Street's rationale discussion at page 1601:

Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

Thus, in this application amending the claims to cover only the abstract mathematical algorithm does not produce a useful, concrete, and tangible result.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fowler, US Patent No. 7,126,600, teaches ceasing the evaluation of a span of pixels when the span walker reaches the edge of the triangle and then the span walker analyzes the next line of pixels in the triangle, see column 1 line 59 to column 2 line 6.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A Brier whose telephone number is (571) 272-7656. The examiner can normally be reached on M-F from 7:30 to 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael

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Razavi, can be reached at (571) 272-7664. The fax phone Number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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